CMS Integrated IT Investment & System Life Cycle Framework Overview

The CMS Integrated IT Investment & System Life Cycle Framework covers the entire life cycle of an IT investment, which is the period of time that begins when an IT investment is first conceived and ends when the investment no longer exists. In most cases, an IT investment is equivalent to an IT project. However, in some cases an IT investment may be comprised of multiple IT projects. While there are various types of IT investments and IT-related projects that exist at CMS, this Framework is designed primarily to address IT investments/projects associated with automated systems.

For a graphical representation of the Framework, see Life Cycle Overview Graphic. A textual description of this graphic is provided below.

Legislative and Business Drivers:

As the name implies, the CMS Integrated IT Investment & System Life Cycle Framework is designed to integrate CMS' IT investment management and governance process with the planning, engineering, implementation, maintenance, and management aspects of the system life cycle. The establishment of this Framework at CMS is based on the following key legislative and business drivers:

- Government Performance & Results Act (GPRA) of 1993;
- Paperwork Reduction Act of 1995;
- Clinger-Cohen Act (formerly the Information Technology Management Reform Act (ITMRA)) of 1996;
- Federal Information Security Management Act (FISMA) of 2002 (formerly the Government Information Security Reform Act (GISRA) of 2000); and
- IEEE/EIA 12207 industry standards for system development.

Lifecycle Phases:

The CMS IT Investment Management Process consists of three primary phases: IT Investment Selection Phase, IT Investment Implementation Phase, and IT Investment Evaluation Phase. These three phases are based on the conceptual framework laid out in the Government Accounting Office's (GAO) February 1997 *Assessing Risks and Returns: A Guide for Evaluating Federal Agencies' IT Investment Decision-making*.

Each of these three investment management phases are further partitioned or aligned with the phases of the system life cycle, as follows:

The IT Investment Selection Phase consists of the Business Case Analysis Phase.

The IT Investment Implementation Phase consists of the Requirements Analysis Phase, Design & Engineering Phase, Development Phase, Implementation & Testing Phase, and the initial part of the Operations & Maintenance Phase.

The IT Investment Evaluation Phase covers the later stages of the Operations & Maintenance Phase, as well as the Disposition Phase.

Regardless of the system development methodology that is employed for a given IT project, the primary activities performed throughout the system life cycle generally remain the same, and are often referred to collectively in terms of the above phases. While the phases of the life cycle are graphically depicted in sequential order, some of the phases may overlap on some projects or may occur iteratively for other projects, depending on the system development methodology selected for the project. For guidance in choosing an appropriate system development methodology, see Selecting a Development Approach.

Artifacts:

The artifacts that are produced for a given IT investment or system life cycle project will depend somewhat on the circumstances of the IT project, as well as on the system development methodology that is employed. Some of the artifacts defined in the Framework are required for generally all IT projects, while others are required for only specific types of projects or are highly encouraged as best practices.

To help you identify the artifacts that may be required for your IT project, please see Artifacts, which provides summary information for each artifact contained in the Framework, including a description of the overall purpose of the artifact, its content, timeframes for preparation and review, and the responsibilities of its various stakeholders. In many cases, templates, samples, and additional guidance are also available for many of the life cycle artifacts.

Reviews:

As with the artifacts that are produced during the life cycle, the reviews that are performed also depend somewhat on the specific circumstances of the project, as well as on the system development methodology that is employed. There are, however, three mandatory review checkpoints in the CMS Framework that each IT project must pass through in some form or fashion during its life cycle: Investment Selection Review (ISR), Preliminary Design Review (PDR), and Operational Readiness Review (ORR).

In addition to these three reviews, there are several other reviews that may be required or highly recommended based on the specific circumstances of the IT project and/or the system development methodology being employed. To help you identify the reviews that may be required for your project, please see Reviews, which provides summary information for each review to explain its purpose, required inputs/outputs, the responsibilities of the various stakeholders, as well as guidance for when and how the review would likely occur during the life cycle.

Policies, Processes, Procedures, and Standards:

To further support the investment management and system life cycle at CMS, several policies, processes, procedures, and standards have been established to provide assistance and guidance. For information regarding CMS' IT policies, see Policies. For more

information on established CMS IT processes and procedures, see Processes or Procedures. For information regarding established development standards and guidelines, see Standards.

Resources:

During the life of an IT project, there are many Active Contributors, as well as Oversight and Review Groups that work together to ensure the success of the endeavor.

One of the key resources available to IT projects is the Component Lead from within the Office of Information Services. Please contact your designated Component Lead at any time for guidance and/or assistance. For additional information to help you get started with a new, or manage an existing, IT project, visit FAQs for some frequently asked questions and corresponding answers.

CMS Integrated IT Investment & System Life Cycle Framework (Checkpoints, Artifacts, & Activities)

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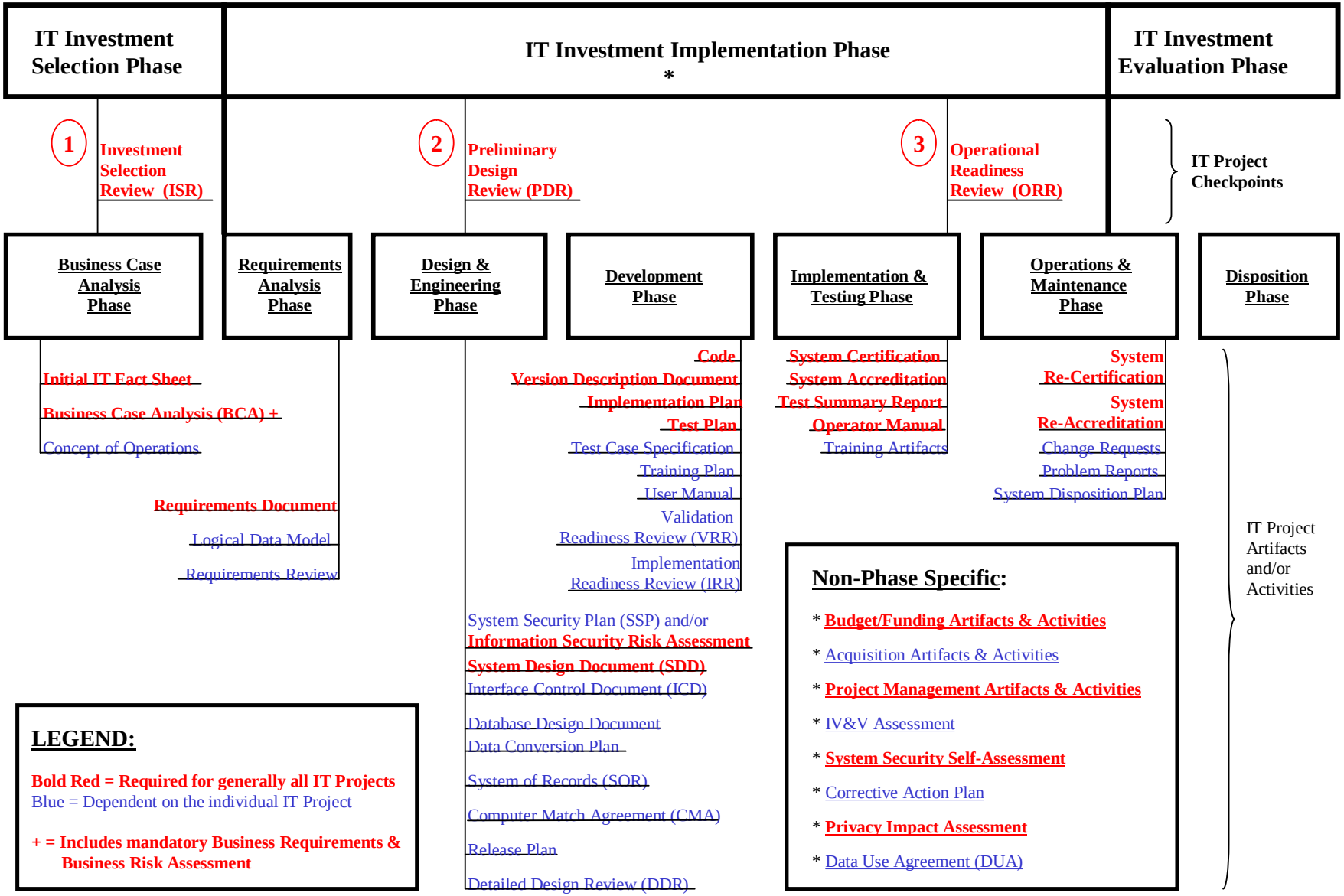

Artifacts

In consideration of the specific circumstances associated with a given IT investment or project, and the system development methodology being employed, the following artifacts are generally required for all IT projects, to an appropriate level of detail:

Initial IT Fact Sheet
Business Case Analysis (BCA)
Requirements Document
Information Security (IS) Risk Assessment (RA)
System Design Document (SDD)
Code
Version Description Document (VDD)
Implementation Plan
Test Plan
Test Summary Report
Operator Manual
Budget/Funding Artifacts & Activities
Project Management Artifacts & Activities
System Security Self Assessment
Privacy Impact Assessment (PIA)

If the IT project will be utilizing the services of a contractor or other Federal agency, or will require other procurement actions, then the following will also likely be required:

Acquisition Artifacts & Activities

If the IT project involves personally identifiable data, then the following additional artifacts may likely be required:

System of Records (SOR)
Computer Match Agreement (CMA)
Data Use Agreement (DUA)

Additional artifacts that may be required depending on the specific circumstances of the IT project, or which may be encouraged as best practices, include the following:

Concept of Operations (ConOps)
Logical Data Model
System Security Plan (SSP)
Interface Control Document (ICD)
Database Design Document
Data Conversion Plan
Release Plan
Test Case Specification
Training Plan
User Manual
Training Artifacts

Change Requests
Problem Reports
System Disposition Plan
Corrective Action Plan

Your Component Lead will be pleased to assist you in determining which artifacts and activities will be required or are encouraged for your specific IT project during its life cycle.

Reviews

In consideration of the specific circumstances associated with a given IT investment or project, and the system development methodology being employed, the following reviews are required for all IT investments/projects, to an appropriate level of detail:

Investment Selection Review (ISR)
Preliminary Design Review (PDR)
Operational Readiness Review (ORR)

In addition, for each automated system, the following are also required:

System Certification
System Accreditation
System Re-Certification
System Re-Accreditation

Additional reviews that may be required depending on the specific circumstances of the IT project, or which may be encouraged as best practices, include the following:

Requirements Review
Detailed Design Review (DDR)
Validation Readiness Review (VRR)
Implementation Readiness Review (IRR)
IV&V Assessment

Your Component Lead will be pleased to assist you in determining which reviews will be required or are encouraged for your specific IT project during its life cycle.